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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/505,564 | 08/24/2004 | Torbjorn Sandstrom | MLSE 1048-1/P00118 | 2445 |
| 22470 | 7590 | 09/07/2006 | EXAMINER | |
| HAYNES BEFFEL & WOLFELD LLP | | | RUTLEDGE, DELLA J | |
| P O BOX 366 | | | ART UNIT | |
| HALF MOON BAY, CA 94019 | | | PAPER NUMBER | |
| | | | 2851 | |

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/505,564

Applicant(s)

SANDSTROM, TORBJORN

Examiner

D. Rutledge

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40-57 is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-27, 29-39, 58 and 59 is/are rejected.
- 7) ☒ Claim(s) 11 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claims Previously Allowed, Now Rejected

1. The claims previously indicated as allowable have now been rejected. See the following paragraphs.

Claim Objections

2. Claims 12 and 29 state that successive pattern descriptions are non - overlapping on the workpiece, but claim 1 says that at least two pattern descriptions are overlapping. Correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 - 10, 12 - 27, 29 - 39, 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. (US Pat. No. 6,312,134)

Claims 1, 18, 37: The reference discloses an apparatus for patterning a work piece: a source 1, an SLM 3; a synchronizer 7. The reference discloses overlapping scans, see col. 4, lines 7 - 14. The reference does not disclose an image deflecting element, but in Fig. 2, a prior art drawing shows an arrangement using the electromagnetic source and a transmittable SLM with a deflecting element 15. Since using a deflective element can

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reduce the size or footprint of an apparatus, one of ordinary skill in the art would be motivated to use the arrangement at for that reason.

Claims 2, 3, 19, 20: Jain et al. disclose that the SLM may be reflective or transmittable. See at least the abstract.

Claims 4, 21: the pixels are micro mirrors, see at least the abstract

Claims 5, 22: a synchronization is performed using a laser source and the synchronizer 7, see at least the abstract

Claims 6 - 9, 23 - 26: The reference does not disclose the data reloading method, but if the radiation were to reach the work piece, which is sensitive to the radiation, the work piece would be useless. One of ordinary skill in the art would have to provide some means of preventing the radiation from reaching the work piece, therefore, the most simple and obvious way is to block the radiation, by deflecting it or controlling the radiation source.

Claims 14 -16, 31 - 33: these claims define deflective element used in the illumination path; modifying the Jain et al. apparatus by adding and or subtracting optical elements is within the skill of the ordinary artisan. For example, using a polygon has been shown to have a positive effect on the homogeneity of the illumination and would thus motivate one of ordinary skill in the art to adapt the Jain et al. apparatus to use such an arrangement.

Claim 17: operating the SLM in this manner one would be able to reduce the throughput because the pixel would be loaded as other are being unloaded rather than unloading

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the SLM completely before reloading. One of ordinary skill in the art would be motivated to adapt this arrangement at least for that reason.

Claim 34: using an SLM to form intermediate tones has been well known; and forming grey scale images provides an improved resolution and would thus motivate one of ordinary skill in the art to use the method claimed.

Claims 38, 39: the reference discloses a wafer as the work piece, but those of ordinary skill in the art would recognize that a mask may also be a work piece.

Claims 10, 12, 13, 27, 29, 30: pattern formation: adjacent pixels, lattice structure, overlapping pixels would be within the ability of one skilled in the art and such one would be motivated to use and or a combination of the methods to achieve fine and even lines and no artifacts.

Allowable Subject Matter


4. Claims 11, 28 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten to include the base claim.
5. Claims 40 - 57 are patentable over the prior art of record.
6. Allowable subject matter has been indicated because the prior art does not teach providing the coherent and non - coherent radiation as claimed.

Response Data

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. Rutledge whose telephone number is (571) 272-2127. The examiner can normally be reached on Mon - Thurs, 6:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


D. Rutledge
Primary Examiner
Art Unit 2851

dr
9/5/2006